UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

and

GEORGIA AGRICULTURAL EXPERIMENT STATION
Athens, GA

and
LOUISIANA AGRICULTURAL EXPERIMENT STATION
Baton Rouge, LA

and

COTTON INCORPORATED
Cary, NC

NOTICE OF RELEASE OF CRB 252, AN UPLAND COTTON GERMPLASM LINE POSSESSING SUPERIOR FIBER QUALITY TRAITS

The Agricultural Research Service, United States Department of Agriculture; Georgia Agricultural Experiment Station; Louisiana Agricultural Experiment Station; and Cotton Incorporated announce the release of CRB 252, an upland (Gossypium hirsutum L.) cotton germplasm line possessing superior fiber quality traits. Developed in a cooperative breeding project spanning the U.S. Cotton Belt, CRB 252 provides public and private breeders with a broadly adapted resource for the improvement of fiber quality.

CRB 252 was derived from a "double cross" involving the cultivars 'Sure Grow 248' (PVP 9700092), 'Phytogen 72' (PVP 200100115), 'Stoneville 474' (PVP 9400152), and 'Acala Maxxa' (PVP 9000168). Cultivars SG 248 and ST 474 were selected as putatively heat-tolerant parents, based upon their yield performance in the low desert in Arizona and upon evaluations of their pollen fertility and fruit retention rates under heat stress. Cultivars PHY 72 and Acala Maxxa were selected as high fiber quality parents based upon their known fiber quality attributes. Crosses were made between putative heat-tolerant and high fiber quality parents to create the two F1 populations SG 248/PHY 72 F1 and ST 474/Maxxa F1, that were then crossed to produce the hybrid population SG 248/PHY 72//ST 474/Maxxa from which CRB 252 was derived. Individual plant selection was practiced in the F2 and F3 generations at the low desert location of Maricopa, AZ, in 2004 and 2005. In 2006, non-replicated progeny tests of F3.4 lines were conducted at Florence, SC; Tifton, GA; St. Joseph, LA; Maricopa, AZ; and Shafter, CA, using augmented designs, with the check cultivars 'Deltapine 393' (DP 393), 'Sure Grow 747' (SG 747), 'FiberMax 958' (FM 958), and 'Phytogen 72' (PHY 72) recurring throughout the tests.

Replicated testing of seven progeny lines was conducted in a total of 13 location-year environments at Florence, SC; Blackville, SC; Tifton, GA; Plains, GA; Alexandria, LA; Maricopa, AZ; and Shafter, CA, in 2007 and 2008.

Fiber quality traits of CRB 252 and the four check cultivars are shown in Table 1. CRB 252 produced a UHM fiber length (31.3 mm) that was superior to the fiber lengths of the high fiber quality check cultivars PHY 72 (30.3 mm) and FM 958 (29.3 mm), as well as the agronomic and yield performance checks DP 393 (29.0 mm) and SG 747 (28.6 mm). The fiber length uniformity of CRB 252 (84.1%) did not differ from that of the check cultivars, with the exception of FM 958 (83.3%), which was inferior to CRB 252. The fiber strength of CRB 252 (318 kN m kg-1) was superior to that of DP 393, SG 747, and FM 958. The high fiber quality check PHY 72 produced a fiber strength that was superior to CRB 252. CRB 252 produced a fiber elongation (5.4%) that was lower than all the check cultivars. Lower fiber elongation values may indicate a "brittle" fiber that is more prone to damage. The short fiber content (often resulting from fiber damage) of CRB 252 (7.0%) did not differ from that of PHY 72 or DP 393 and was superior (lower) than that of SG 747 and FM 958. The micronaire of CRB 252 (4.3) was lower than that of all the check cultivars. The yield and yield components, lint percent and boll weight, of CRB 252 and the check cultivars are shown in Table 2. In across-location analyses, the yield of CRB 252 (1420 Kg ha-1) was lower than that of the agronomic and yield performance checks DP 393 (1632 Kg ha-1) and SG 747 (1593 Kg ha-128.6 mm), equivalent to the yield of FM 958 (1435 Kg ha-1), and higher than that of the fiber quality check, PHY 72 (1336 Kg ha-1). At 38.5%, the lint percent of CRB 252 is lower than the check cultivars'. CRB 252 did not differ from the check cultivars in boll weight. The yield stability of CRB 252 across locations, relative to the check cultivars, can be seen in Table 3. CRB 252 did not differ significantly from the check cultivars in yield at the individual locations, with the exceptions of Florence, SC, and Alexandria, LA. At the Florence, SC, location the cultivar DP 393 produced higher yields than did CRB 252 and the high fiber quality check cultivars. At the Alexandria, LA, location, the agronomic and yield performance check cultivars DP 393 and SG 747 produced higher yields than did the high fiber quality checks and CRB 252. Overall, CRB 252 is an excellent source of fiber quality and acceptable yield potential that appears to be stable across production environments.

Small quantities of seed (25-50 g) are available to cotton breeders, geneticists, and other research personnel upon written request to: R.G. Percy, USDA-ARS, Southern Plains Agricultural Research Center, 2881 F&B Road, College Station, TX 77845. Requests for seed from outside the USA must be accompanied by an import permit allowing entry into the requestor's country. The provider may not be able to certify that seed is free of certain insects or pathogens specified on import permits, and in such cases seed cannot be supplied. It is requested that appropriate recognition of the source be given when these germplasm lines contribute to the development of a new breeding line, hybrid, or cultivar. Genetic material of this release will be deposited in the

National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars.

Signatures:

Director, Georgia Agricultural Experiment Station
University of Georgia

Date

Director, Louisiana Agricultural Experiment Station
Louisiana State University

August 18, 2009
Date

Vice President, Agricultural Research
Cotton Incorporated

August 24, 2009
Date

Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

8/26/09
Date